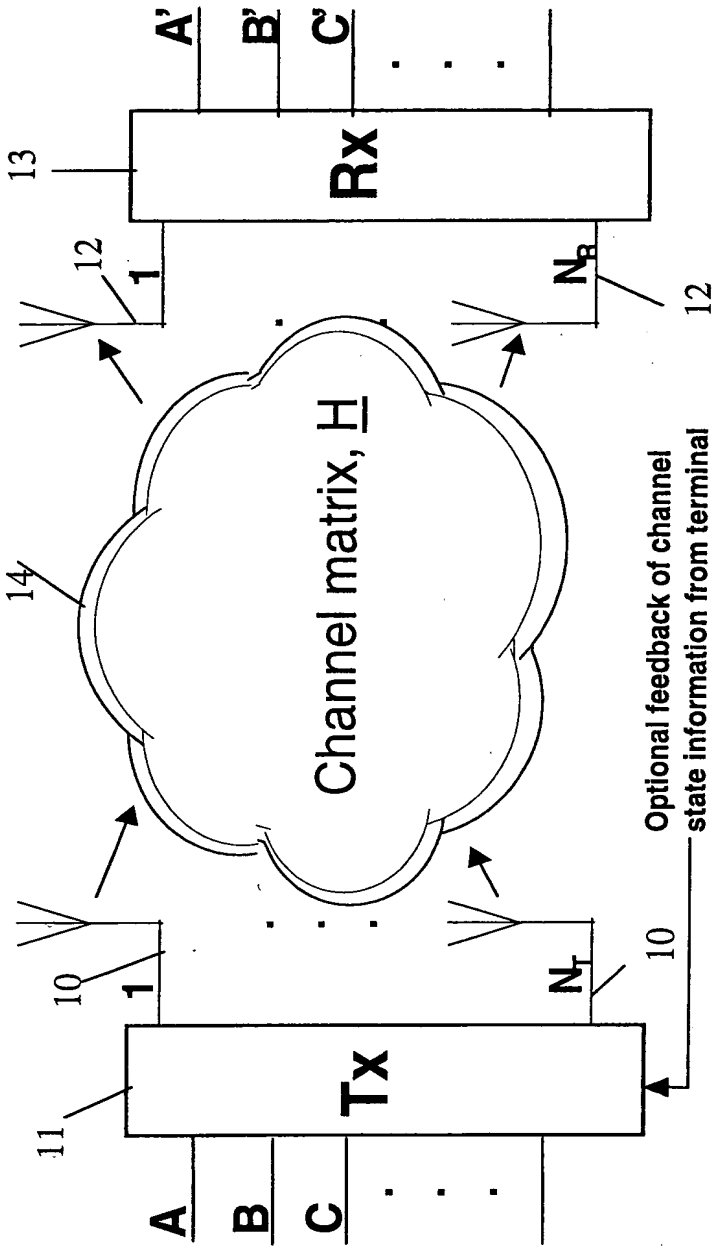
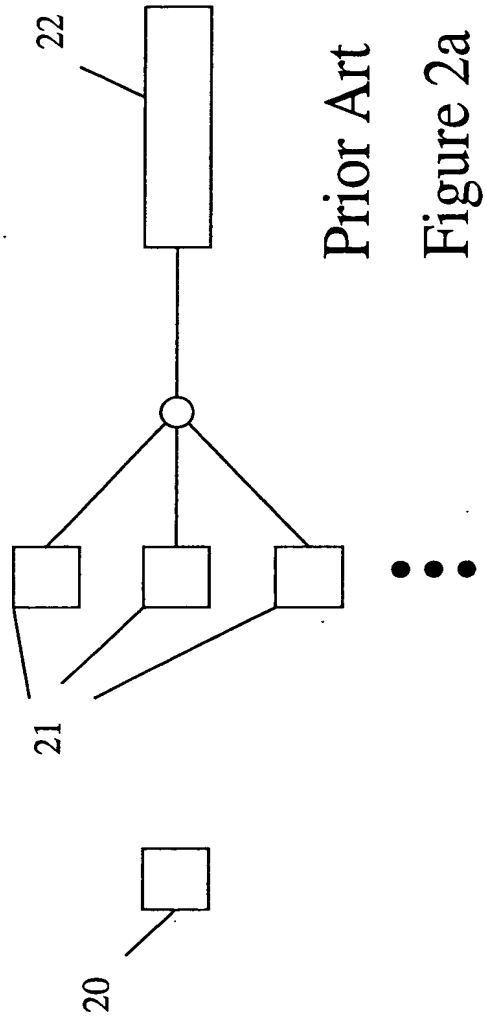


PRIOR ART

FIGURE 1



Prior Art
Figure 2a

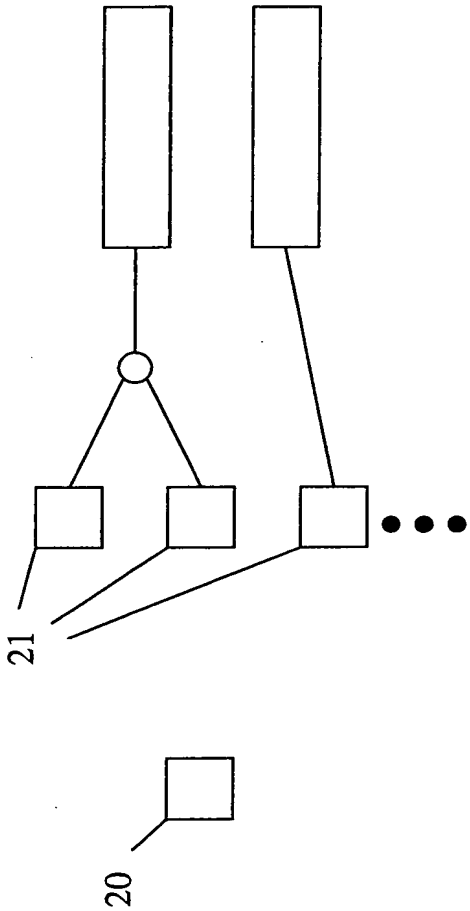
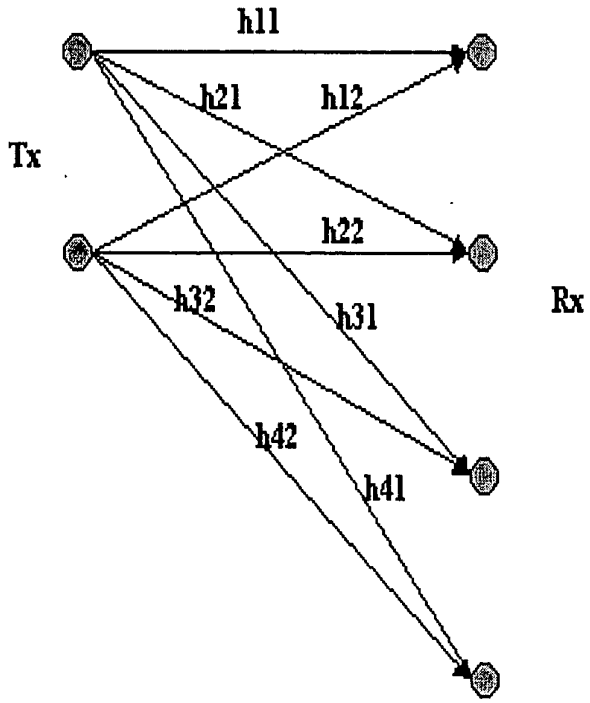
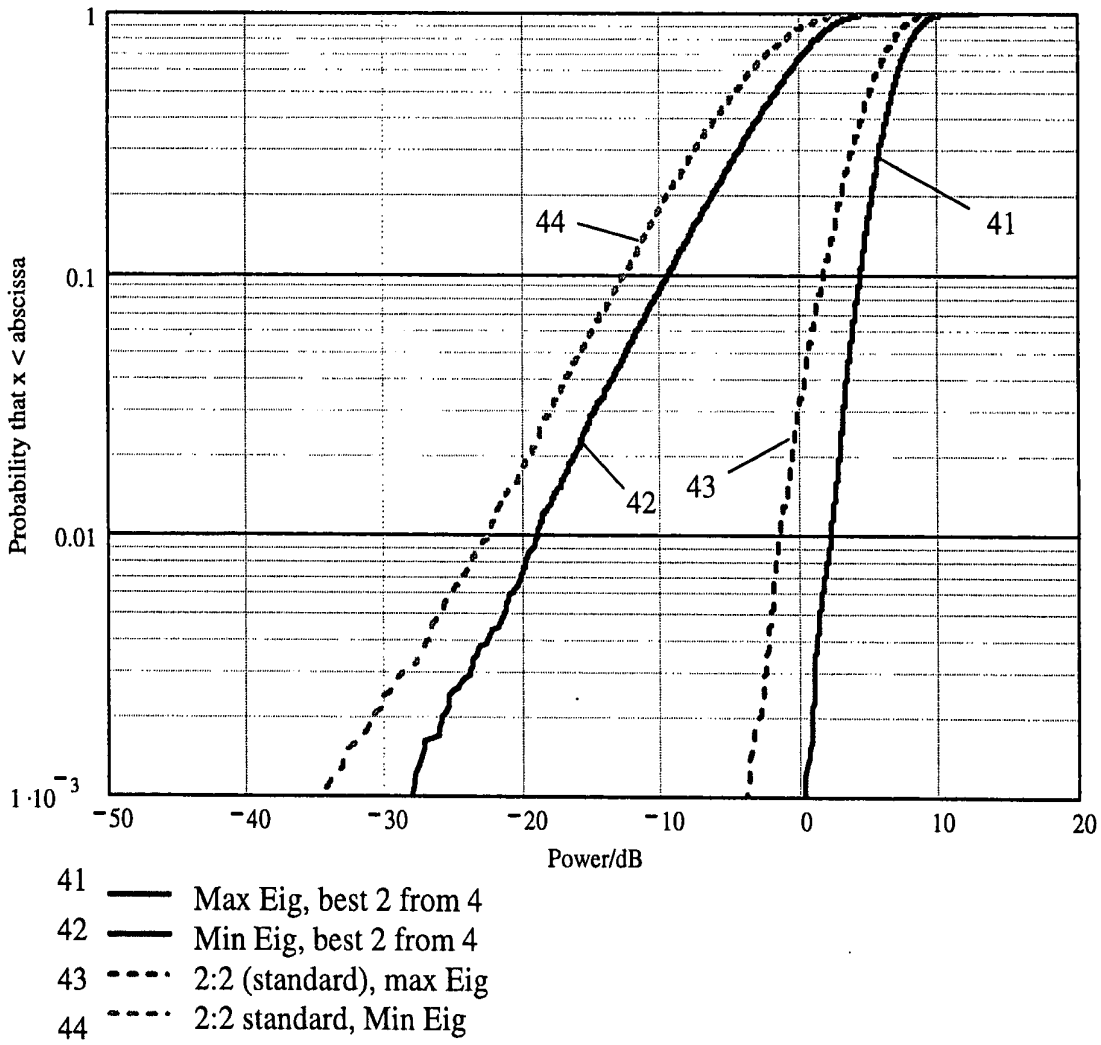


Figure 2b



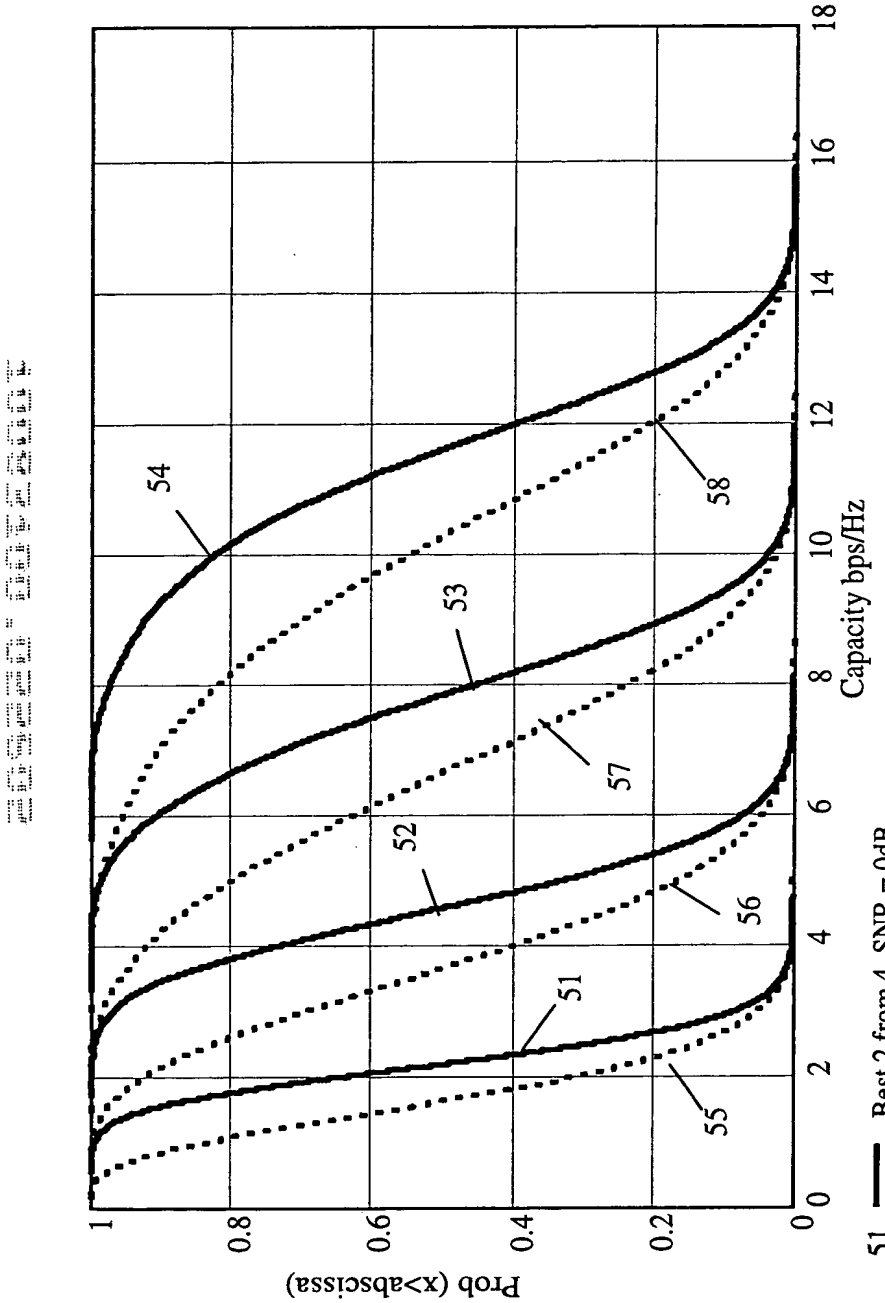
MIMO configuration with 2 Node B antennas and 4 UE antennas

Figure 3



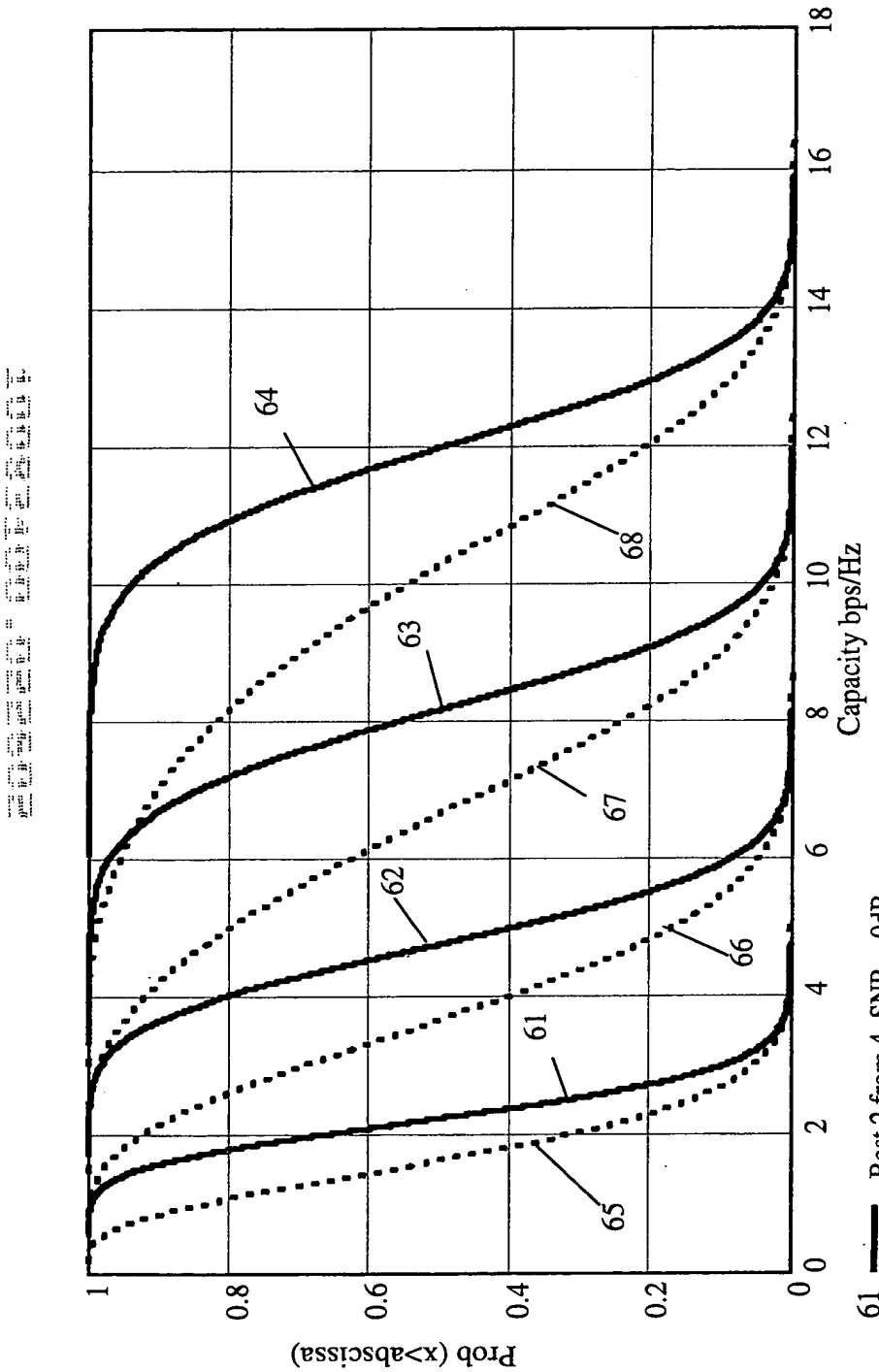
Comparison of eigenvalues for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum sum of eigenvalues as the selection metric.

Figure 4



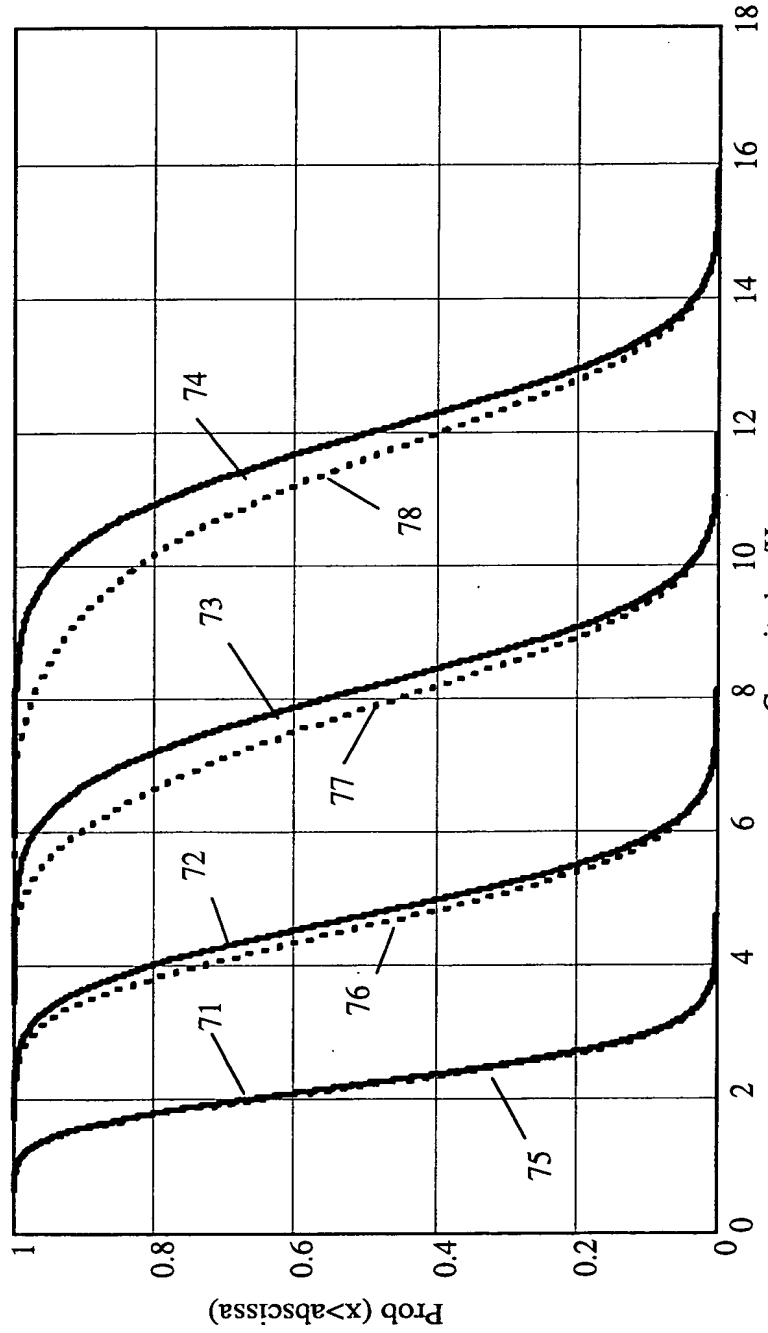
Comarison of capacity distributions for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum sum of eigenvalues as the selection metric.

Figure 5



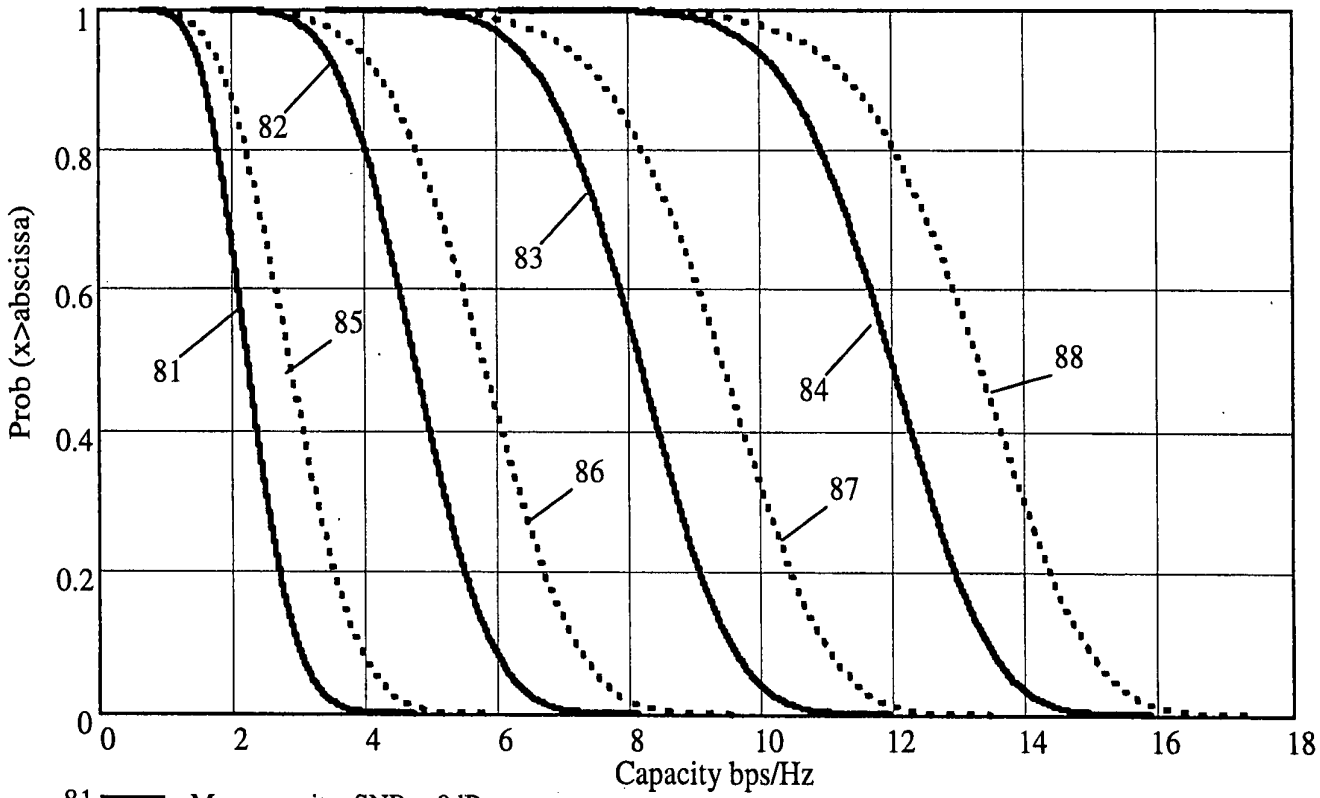
Comparison of capacity distrbutions for standard 2:2 MIMO and eigenvalue selection diversity (best 2 from 4) using the maximum instantaneous link capacity as the selection metric.

Figure 6



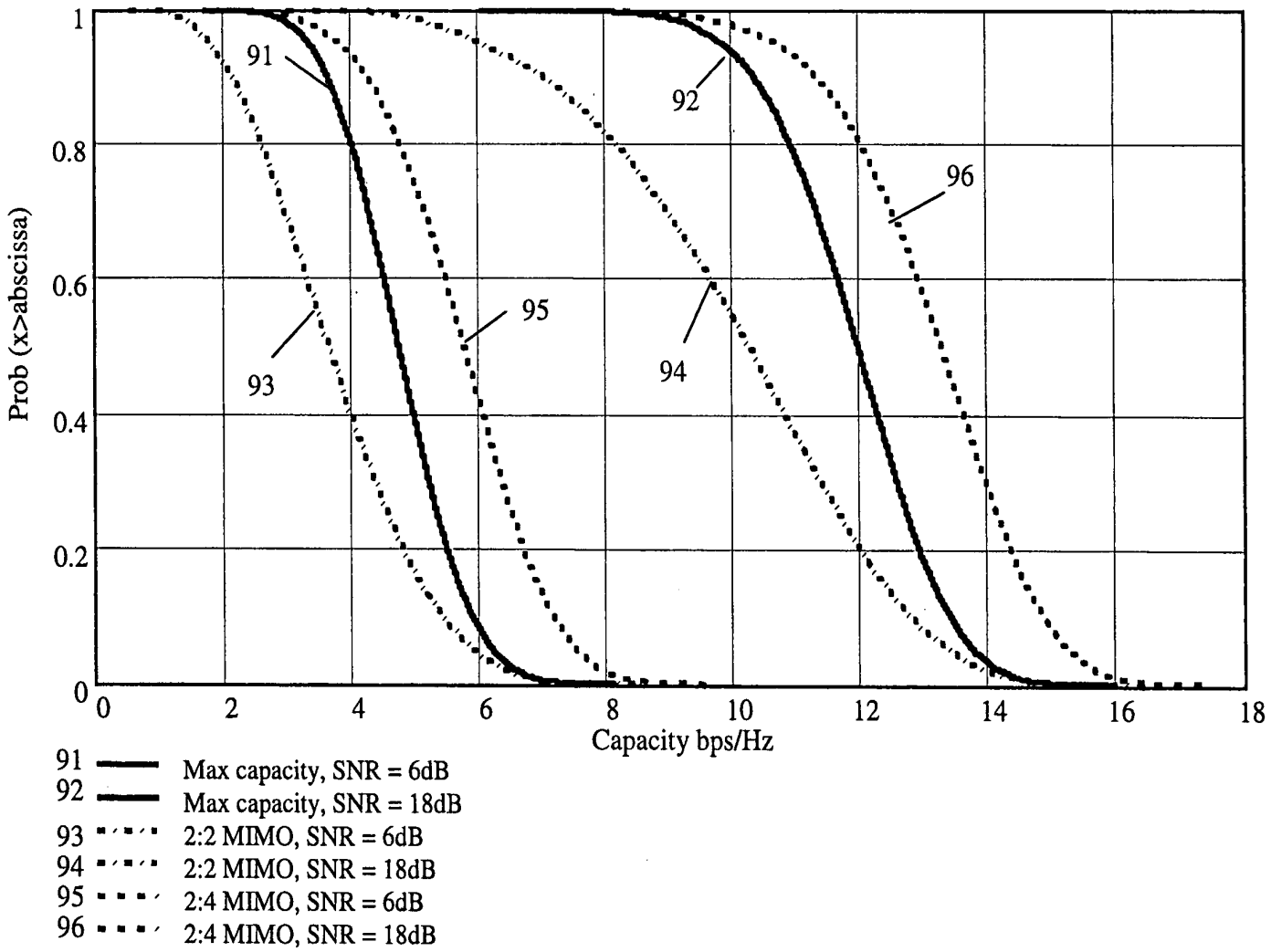
Comparison of capacity distributions for the two eigenvalue selection diversity schemes

Figure 7



Comparison of 'maximum capacity' eigenvalue selection diversity and standard 2:4 MIMO capacity distributions.

Figure 8



Comparison of maximum capacity eigenvalue selection diversity with 2:2 and 2:4 MIMO capacity curves

Figure 9

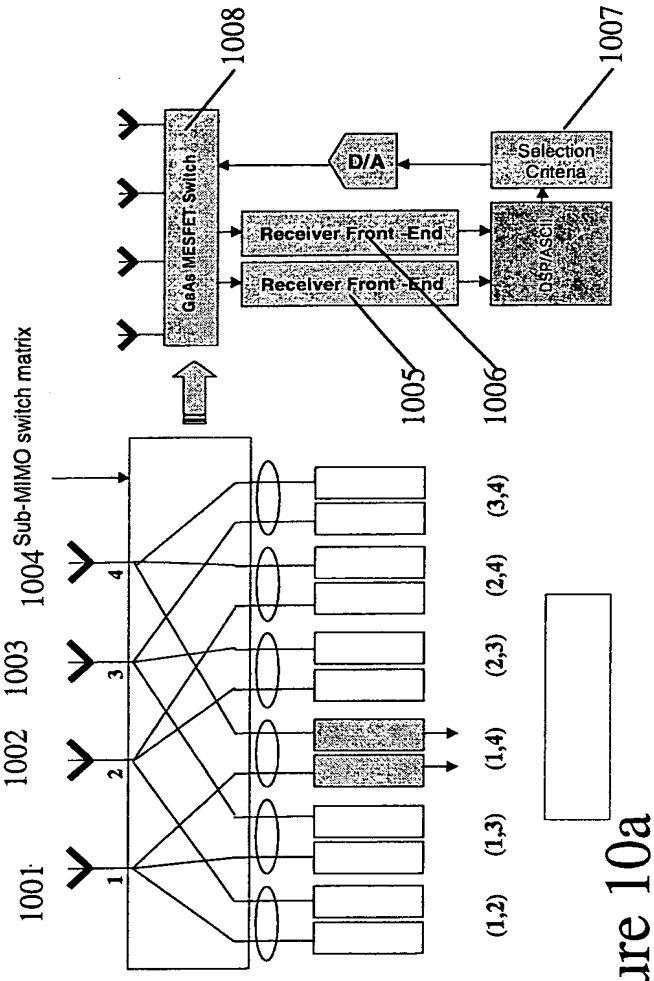

1008
1007
GaAs MESFET Switch
D/A
Selection Criteria
Receiver Front -End
Receiver Front -End
DSP/ASIC
1005
1006
Sub-MIMO switch matrix
1004
1003
1002
1001
1
2
3
4
(1,2)
(1,3)
(1,4)
(2,3)
(2,4)
(3,4)

Figure 10a

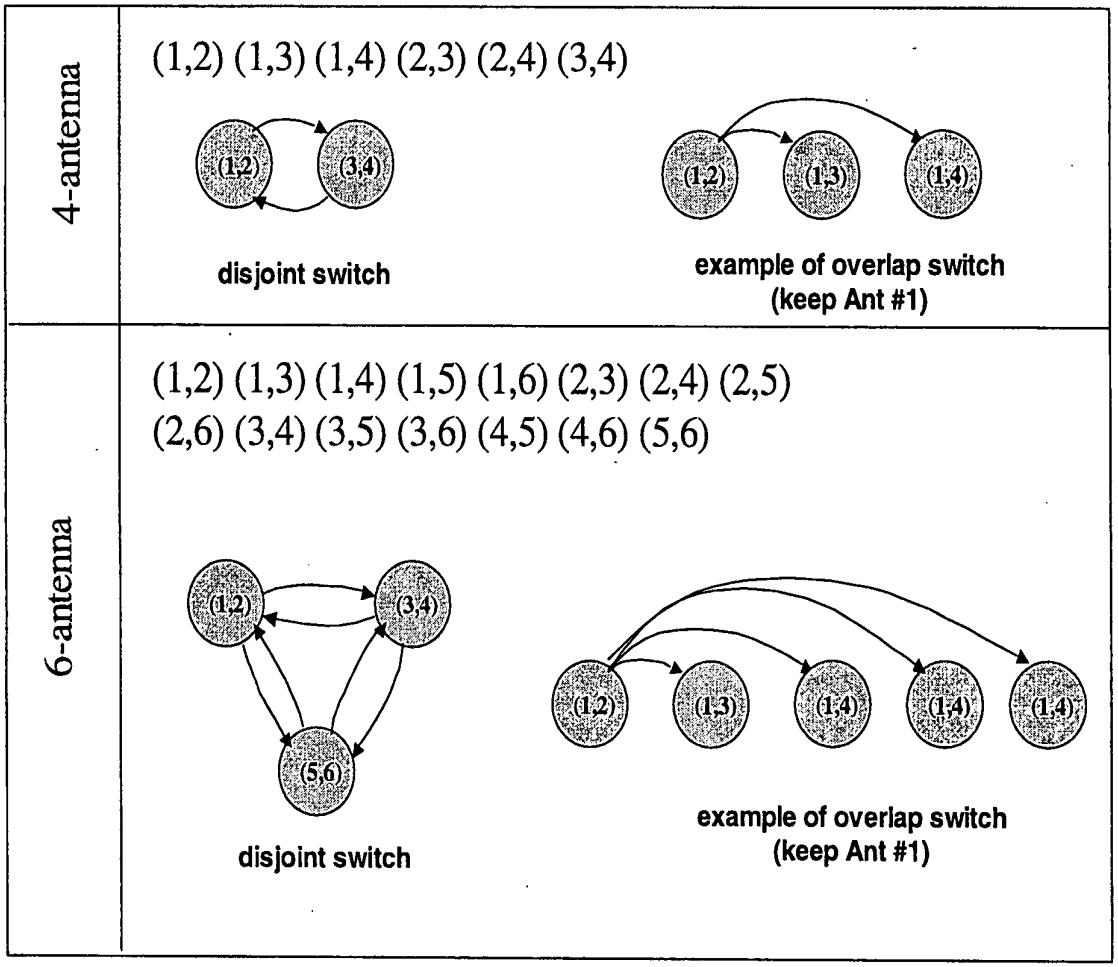

4-antenna
(1,2) (1,3) (1,4) (2,3) (2,4) (3,4)
(1,2)
(3,4)
disjoint switch
(1,2)
(1,3)
(1,4)
example of overlap switch
(keep Ant #1)
6-antenna
(1,2) (1,3) (1,4) (1,5) (1,6) (2,3) (2,4) (2,5)
(2,6) (3,4) (3,5) (3,6) (4,5) (4,6) (5,6)
(1,2)
(3,4)
(5,6)
disjoint switch
(1,2)
(1,3)
(1,4)
(1,4)
(1,4)
example of overlap switch
(keep Ant #1)

Figure 10b

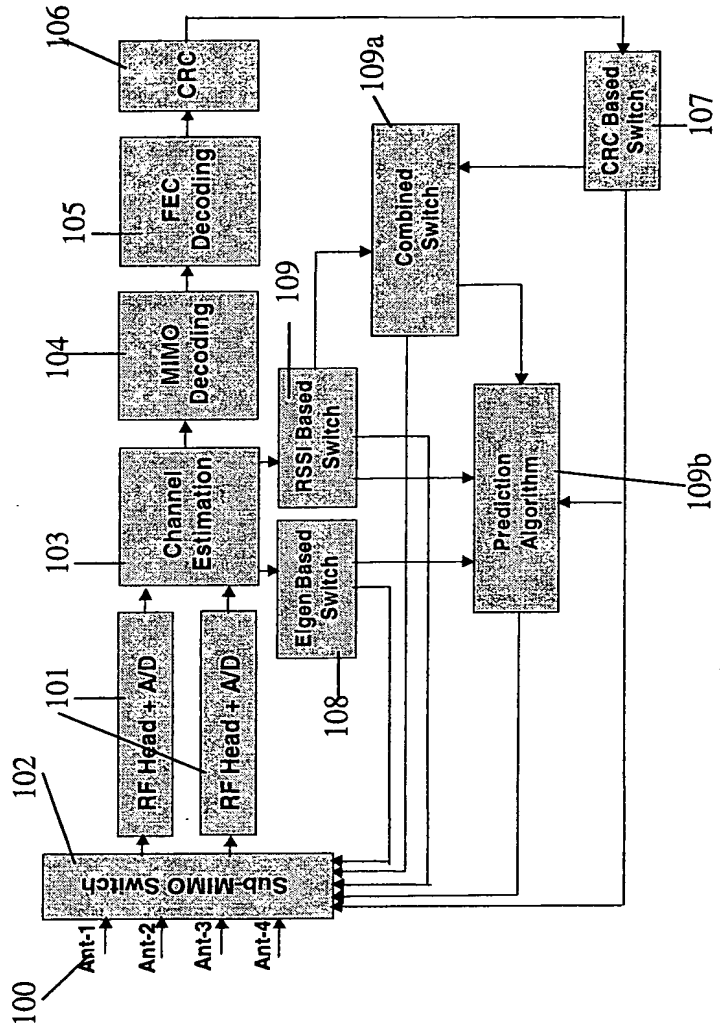

100
Ant-1
Ant-2
Ant-3
Ant-4
102
Sub-MIMO Switch
101
RF Head + A/D
RF Head + A/D
103
Channel Estimation
104
MIMO Decoding
105
FEC Decoding
106
CRC
108
Eigen Based Switch
109
RSSI Based Switch
109a
Combined Switch
109b
Prediction Algorithm
107
CRC Based Switch

Figure 10c

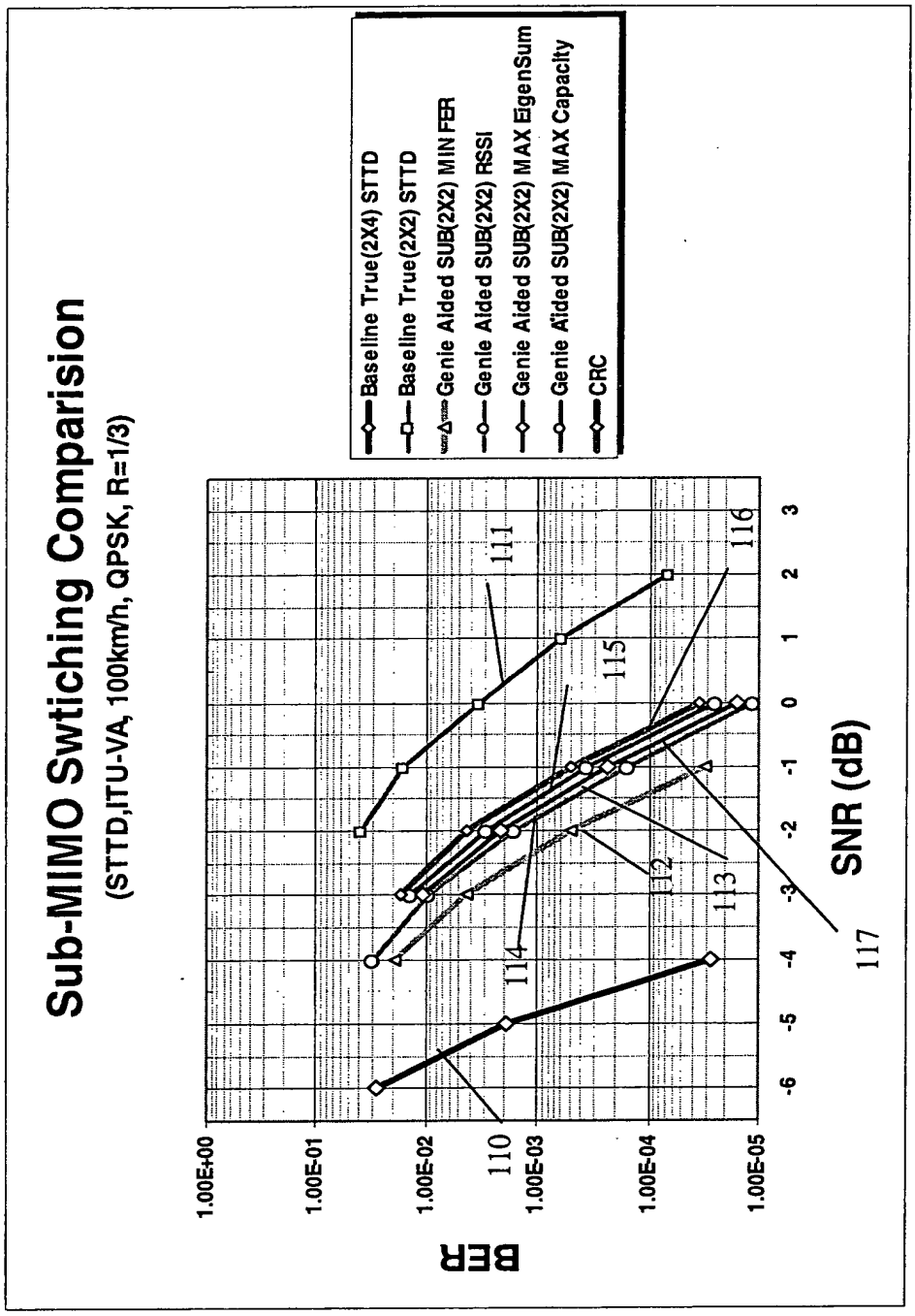

Sub-MIMO Swtiching Comparision
(STTD,ITU-VA, 100km/h, QPSK, R=1/3)
Baseline True(2X4) STTD
Baseline True(2X2) STTD
Genie Aided SUB(2X2) MIN PER
Genie Aided SUB(2X2) RSSI
Genie Aided SUB(2X2) MAX EigenSum
Genie Aided SUB(2X2) MAX Capacity
CRC
BER
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
-6
-5
-4
-3
-2
-1
0
1
2
3
SNR (dB)
110
111
112
113
114
115
116
117

Figure 11

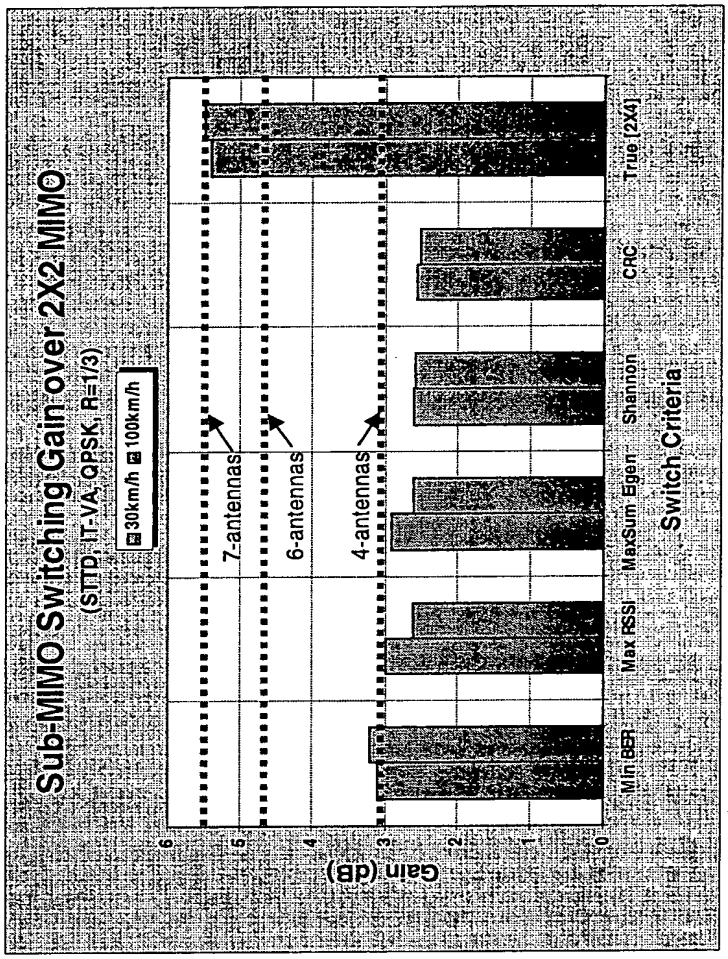

Sub-MIMO Switching Gain over 2X2 MIMO
(STTD, IT-VA, QPSK, R=1/3)
30km/h
100km/h
7-antennas
6-antennas
4-antennas
Gain (dB)
0
1
2
3
4
5
6
Min BER
Max RSSI
MaxSum Egen
Shannon
CRC
True (2X4)
Switch Criteria

Figure 12

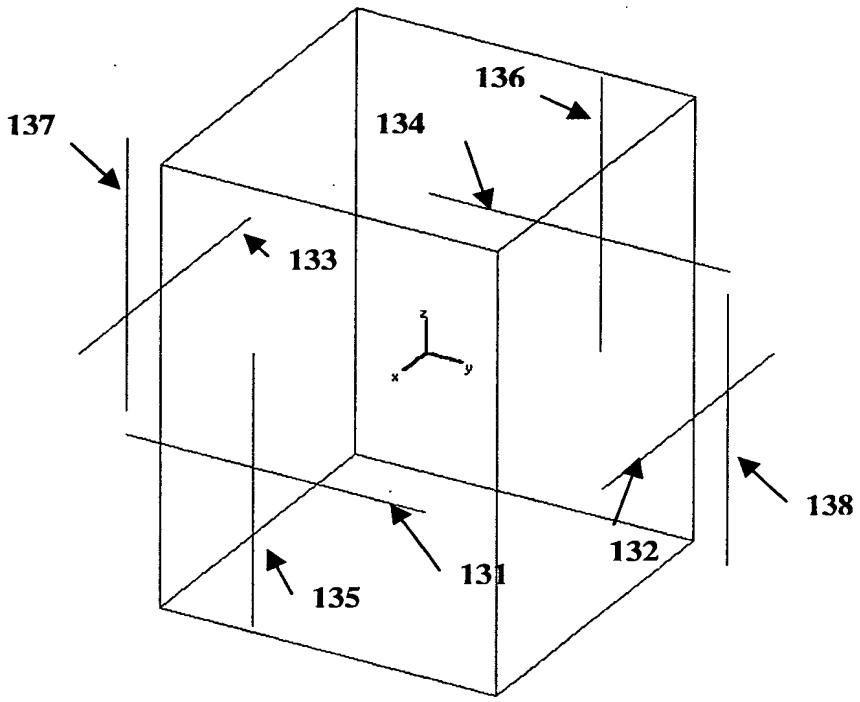


Figure 13

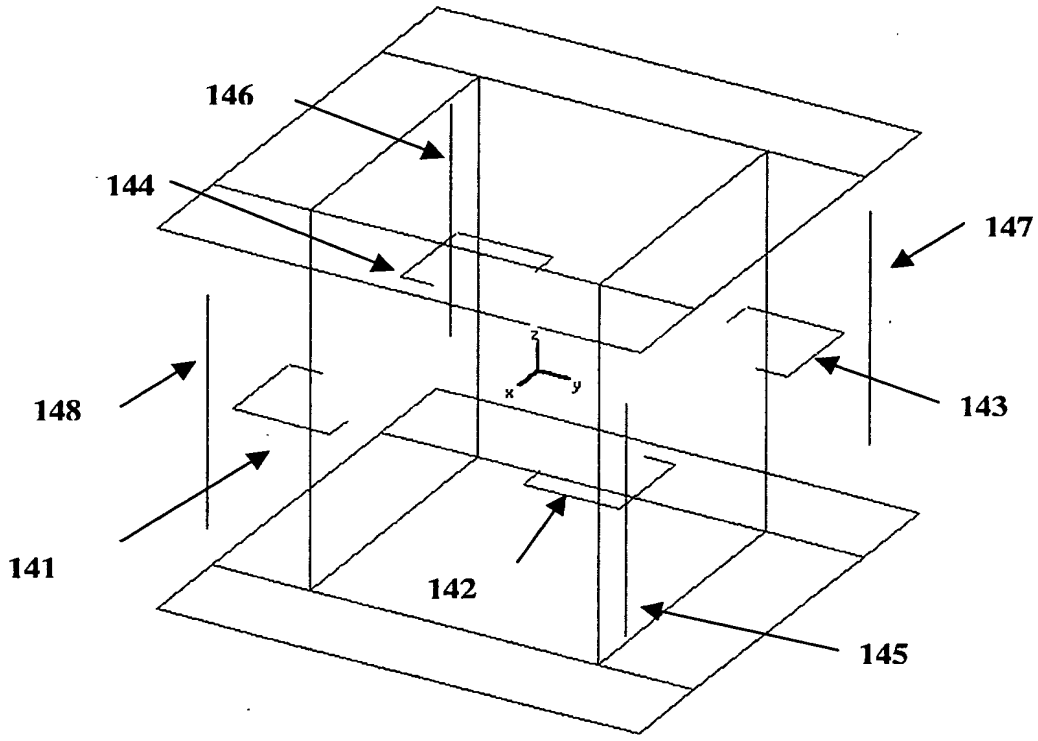


Figure 14

	Configuration 1		Configuration 2			
Average signal level (dB)	180°	4.6	180°	3.9		
	90°	6.7	90°	4.8		
Signal level spread (dB)	180°	1.4	180°	1.5		
	90°	0.5	90°	0.3		
Average standard deviation (dB)	180°	4.1	180°	1.7		
	90°	1.4	90°	0.4		
Lowest maximum achievable diversity gain (dB) (unit 0° orientation)	11.5		15			
Lowest maximum achievable diversity gain (dB) (unit 45° orientation)	14.5		14			

Figure 15

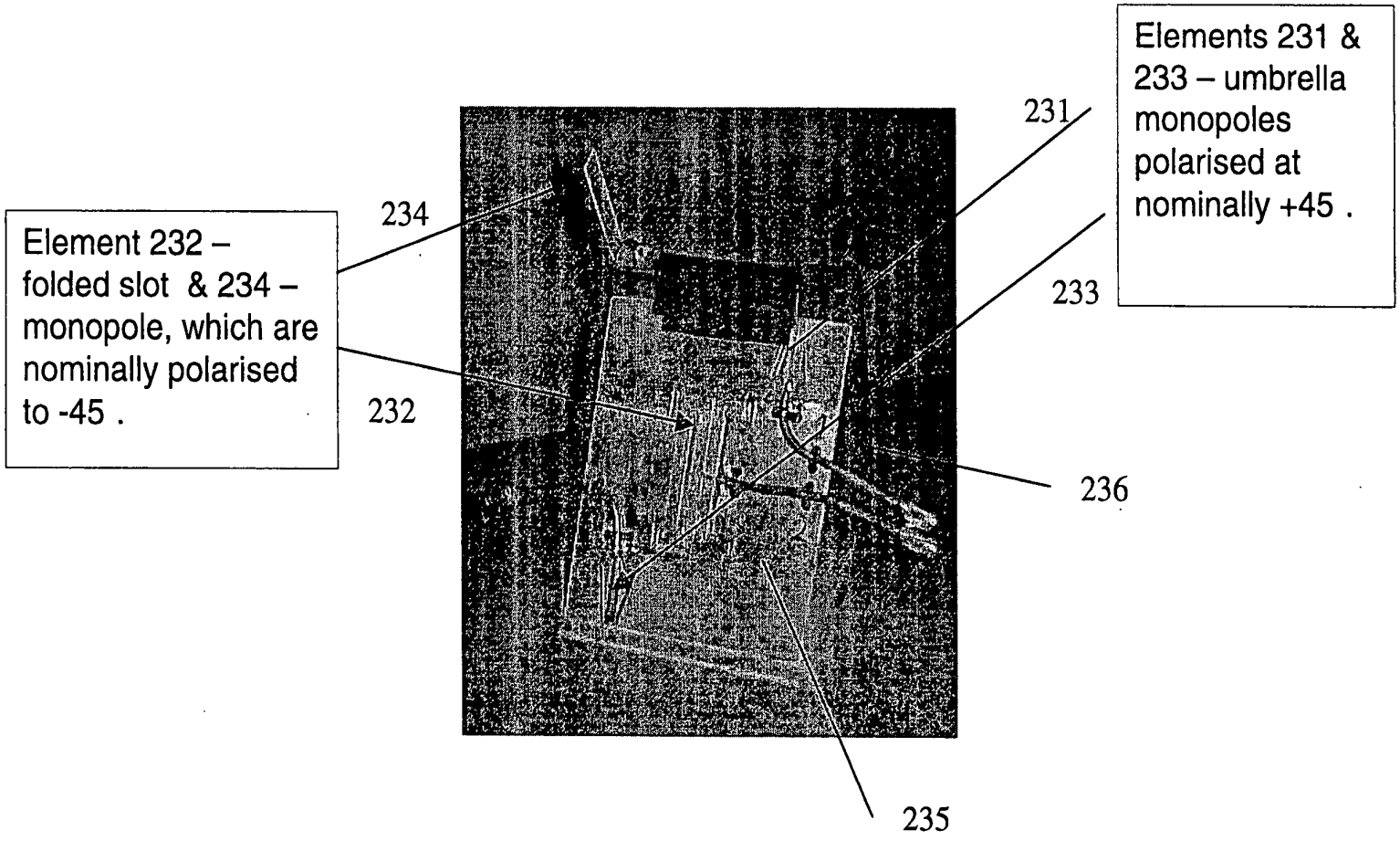

Elements 231 & 233 – umbrella monopoles polarised at nominally +45 .
231
233
Element 232 – folded slot & 234 – monopole, which are nominally polarised to -45 .
234
232
236
235

FIGURE 16

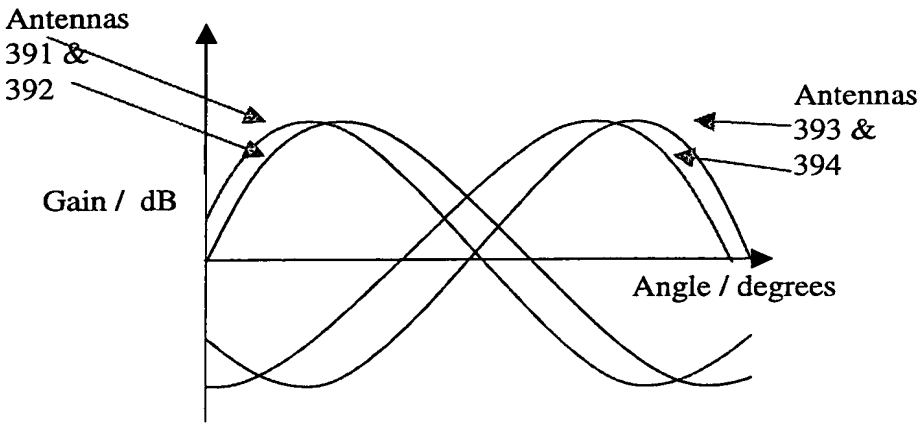


Figure 17

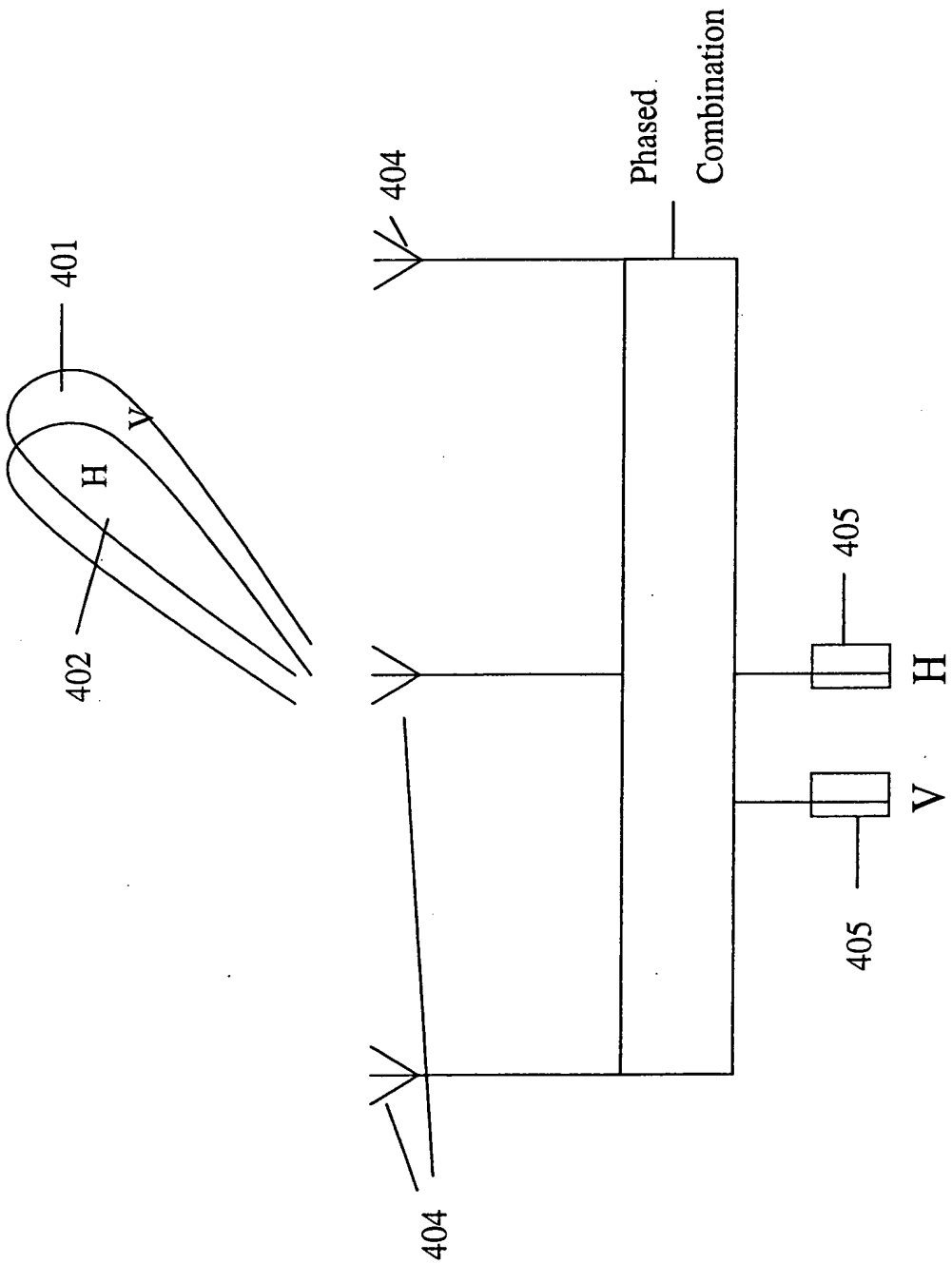


FIGURE 18